Jim Doyle
Governor

Helene Nelson
Secretary

State of Wisconsin
Department of Health and Family Services

DIVISION OF PUBLIC HEALTH
1 WEST WILSON STREET
P O BOX 2659
MADISON WI 53701-2659

608-266-1251
FAX: 608-267-2832
www.dhfs.state.wi.us

Official Health Alert

June 8, 2003 12:10 AM CDT

Monkeypox-like orthopox virus infections in humans having direct contact to prairie dogs; Wisconsin, Illinois, and Indiana

To: Local Health Departments and Infection Control Practitioners

*****Please share with health care providers*****

An extensive multidisciplinary investigation in Wisconsin and Illinois has detected and identified the occurrence of a rapidly emerging outbreak of monkeypox-like virus infections in humans associated with direct or close contact with ill prairie dogs. To date participants in the investigation include the Marshfield Clinic and Marshfield Laboratories, Froedtert Hospital and Medical College of Wisconsin, the City of Milwaukee Health Department and at least 10 additional health departments in Wisconsin and Illinois, the Wisconsin Division of Public Health, Wisconsin Department of Agriculture Trade and Consumer Protection and Wisconsin State Laboratory of Hygiene, the Illinois Department of Public Health, the CDC and the USDA.

Clinical illness: At least 19 confirmed or suspected cases of monkeypox (monkeypox-like virus infections) related illnesses have been reported among residents of Wisconsin (16) and Illinois (2), and Indiana (1). In Wisconsin, the case patients typically experienced a prodrome consisting of fever, headaches, nonproductive cough, lymphadenopathy, chills, and drenching sweats. This was followed 1-10 days later by the development of papular rash that typically progressed through stages of vesiculation, pustulation, umbilication and crusting. Rash has occurred in 15 of 16 Wisconsin cases. In some patients early lesions have become ulcerated. While no generalizations can be made about the rash distribution, lesions have occurred on head, trunk and extremities, many of the patients had initial and satellite lesions on hands and extremities. Rashes were generalized in some patients. Following initial rash appearance, at any point in time individual patients generally manifested rash lesions in different "crops" or stages.

Laboratory findings: Today CDC announced that a monkeypox-like orthopox virus was the etiologic agent of these illnesses. The CDC had received clinical specimens obtained from three patients hospitalized at Froedert Hospital in Milwaukee and one patient from Illinois. All specimens received from the four patients were positive by polymerase chain reaction (PCR) This is also consistent with recent results from the Marshfield Laboratories that demonstrated a virus morphologically consistent with an orthopox virus on electron microscopic (EM) examination of skin lesion tissue from a case patient and a submandibular lymph node from a prairie dog that bit a case patient and days later died spontaneously. Tissue culture of the human

skin lesion tissue and prairie dog lymph node tissue also yielded a virus with typical orthopox morphology on EM that will be further characterized by CDC. Digital images of skin lesions from three case patients and the EM images of the orthopox virus may be viewed at http://research.marshfieldclinic.org/crc/prairiedog.asp

Epidemiologic features: To date, all known case patients in Wisconsin had illness onsets between May 15 and June 3. Case patients range in age from 4 years to 48 years old (median 34 years). All case patients reported direct or close contact with ill prairie dogs (15 cases) or an ill rabbit (1 case) occurring within 7 to 21 days prior to onset. Of note, the ill rabbit had prior contact with an ill prairie dog in a veterinary clinic. In one patient, skin to skin contact with another patient's lesion occurred in addition to direct animal contact. Because exposures to ill prairie dogs occurred over prolonged intervals, determination of the incubation periods for many patients was difficult. Our best estimate for the incubation period is a range of 4-12 days, but may be as long as 20 days.

Dermatologic and systemic illnesses affecting the prairie dogs were also reported but to date have not been well characterized. In May the prairie dogs were sold by a Milwaukee animal distributor to two pet shops in the Milwaukee area and during a pet "swap meet" (pets for sale or exchange) in Northern Wisconsin. The Milwaukee animal distributor obtained the animals from a Northern Illinois animal distributor. Illinois officials today identified 5 additional parties in Wisconsin who received animals from the same distributor, but none reportedly received prairie dogs. Multiple animals of exotic species including Gambian giant rats were present and may have also been ill at the Illinois facility. Transmission of pathogenic agents between species cannot be excluded. Preliminary information suggests the Illinois distributor purchased the animals from a Texas animal distributor and distributors in other states might be involved. Prairie dogs apparently were captured from natural habitats in multiple states. The procurement and distribution of the prairie dogs and exotic species, such as the Gambian giant rat that may have been involved with monkeypox-like virus transmission to prairie dogs, is being investigated by state and federal agriculture agencies.

Persons with the signs and symptoms described above who have had recent contact with prairie dogs or other exotic wild animal species, including Gambian giant rats, are encouraged to see their physician and to report their illnesses to their local or state department of health. Categories of animal species likely susceptible to these viruses include non-human primates, lagomorphs (rabbits and hares), and rodents. In Wisconsin there has been one suspected fatal infection in a pet rabbit acquired following contact with an ill prairie dog in a veterinary facility. The owner of the rabbit subsequently developed likely monkeypox virus infection

Precautions and guidelines: It appears that the primary route of transmission of the agent is from prairie dog to human following close contact. However, because other routes of spread cannot be excluded in some cases, as a precaution, it is recommended that individuals adhere to the following guidelines until more information on the source of these infections becomes available:

- Avoid contact with any prairie dogs or Gambian giant rats that appear to be ill (e.g., are missing patches of fur, have a visible rash on the skin, or have a discharge from eyes or nose)

- Wash hands carefully with soap and warm water (an alcohol gel may be used if hands are not visibly soiled) after any contact with prairie dogs or any species of animal whether or not exotic.
- Seek medical attention if signs and symptoms of illness such as fever, cough, headache, myalgia, rash or lymph node enlargement occur within 3 weeks after contact with prairie dogs or Gambian giant rats. Inform the treating physician or other clinician of the animal exposure.

Inpatient infection control

Immediately upon identification of a case, clinicians should notify infection control personnel. Until the etiology and route of transmission are known, infection control measures for inpatients should include:

- Contact precautions including use of gown and gloves for contact with the patient or their environment.
- Airborne precautions including an isolation room with negative pressure relative to the surrounding area and use of an N-95 respirator for persons entering the room. If a negative pressure room is not available place the patient in a private room.

Standard precautions routinely include careful attention to hand hygiene.
When caring for patients with suspected cases of this illness, clinicians should wear eye protection for all patient contact. Soiled laundry should not be shaken or otherwise handled in a manner that may aerosolize infectious particles. Handle used patient care equipment in a manner that prevents contamination of skin and clothing. Ensure that used equipment has been cleaned and reprocessed appropriately.

Outpatient Infection Control

<u>If an ill human is in the household</u>**:**

1. Keep person isolated at home until the scabs from any skin lesions have fallen off or, if no skin lesions occurred, until 10 days after the onset of prodrome symptoms (fever, headache, nonproductive cough, lymphadenopathy, chills, and drenching sweats).

2. Use vinyl or latex gloves to handle scabs in order to dispose of them
   - double bag in plastic garbage bags
   - Until further instructions are provided store bags in an area out of contact with animals (in secure garbage cans)

3. The ill individual should sleep alone in bed separate from others.

4. If close contact in the same room with family is essential and cough is present, the case patient should wear a surgical mask to prevent or minimize potential for disease transmission
   - Surgical masks for case patients
   - N-95 respirators for health care workers who come into home.

5. Cover lesions with a dressing. Covering with clothing is also recommended. Dressings should be changed when they become saturated. Used dressings should be disposed as described in #2 above.

6. No guests in the home until the scabs from any skin lesions have fallen off or, if no skin lesions occurred, until 10 days after the onset of prodrome symptoms.

7. No shared towels or bedclothes. Clothes, towels, and bedclothes should be washed in hot water.

8. Good hand hygiene is essential
   - Soap and warm water should be used to wash hands
   - If the hands are not visibly soiled, alcohol hand gel can be used
   - Hand hygiene is especially important before touching skin or mucous membranes of self or others, and when touching eyes, as for contact lens maintenance.

9. Asymptomatic contacts should be on 21-day fever watch and take temperature twice per day. **Any** fever should be reported to health care provider and the local or state health department.

10. If other persons in the household develop symptoms, call a health care provider as soon as possible. In advance of an actual visit, notify the health care provider that the case patient had possibly had contact with monkeypox virus.

If an ill animal is in the household**:**

1. Monkeypox virus can persist in environment. Precautions should be taken to clean surfaces and objects. Use vinyl or latex gloves while cleaning.
   - animal cages and other surfaces with which ill animals had contact
     - clean with quaternary ammonia or bleach solution (1/2 cup per gallon of water)
   - animal bedding and other disposable items
     - agitate items as little as possible to minimize aerosolization of the virus
     - double bag in plastic garbage bags and tie the bags
     - Until further instructions are provided store bags in an area out of contact with animals (in secure garbage cans)

2. Disposition of live animals
   - Isolate animals in separate room from other mammals.
   - Euthanasia of ill animals suspected of being infected with monkeypox virus is strongly recommended
     - A veterinarian can be called to euthanize the animal. The veterinarian should be notified prior to the visit that a prairie dog with suspect monkeypox will be brought to the clinic, so the appropriate infection control precautions can be taken.
     - Veterinarians should use personal protective equipment, including gloves and gowns. When examining sick rodents, lagomorphs, and exotic pets, especially prairie dogs and Gambian giant rats, a NIOSH-certified N95 filtering disposable respirator should

be used, if available; otherwise, a surgical mask should be worn. When a suspect case is identified, veterinarians should limit staff that come in contact with the animal, and if the animal is admitted, it should be housed in a manner that would isolate it from all other animals. Housing in a negative airflow room is highly recommended, if available.
  - Animal shelters may accept and euthanize ill animals. Provide notification before the animal is brought to the shelter.
  - As a last resort, contact the local health department of jurisdiction for other options
- **<u>Live animals suspected of being infected with monkeypox virus absolutely must not be released into the wild.</u> Not only is this illegal in Wisconsin, but it is also inhumane to the animals**

3. Good hand hygiene is essential after contact with animals, their cages, or bedding.
   - Soap and warm water should be used
   - If the hands are not visibly soiled, alcohol hand gel can be used
   - Hand hygiene is especially important before touching skin or mucous membranes of self or others and when touching eyes as for contact lens maintenance.

If the patient is admitted to the hospital, clinicians should notify infection control personnel immediately. Until the etiology and route of transmission are known, infection control measures for inpatients should include:

- Contact precautions including use of gown and gloves for contact with the patient or their environment.
- Airborne precautions including an isolation room with negative pressure relative to the surrounding area and use of an N-95 respirator for persons entering the room. If a negative pressure room is not available place the patient in a private room.

Standard precautions routinely include careful attention to hand hygiene.
When caring for patients with suspected cases of this illness, clinicians should wear eye protection for all patient contact.

To minimize the potential of transmission outside the hospital, case patients as described above should limit interactions outside the home until the epidemiology of illness transmission is better understood.

Treatment: Because the etiology of these illnesses is a monkeypox-like virus and the illnesses to date have been serious but not life threatening, no specific treatment recommendations can be made at this time. The therapeutic use of cidofovir is being assessed by CDC, and may be effective in treating serious cases. It is important to note that other illnesses, such as plague and tularemia, can also be transmitted from prairie dogs to humans. These illnesses should also be ruled out if there is high suspicion, since there are recognized treatments for these diseases.

Reporting: Healthcare providers and public health personnel should report cases of these illnesses to their state or local health departments as soon as they are suspected. A case report and interview form are being adapted and will be available soon.

For more information contact the Wisconsin Division of Public Health (608-267-9003) or your local health department. After hours, clinicians and health departments may call the DHFS Emergency Hotline (608-258-0099). Information is also available through CDC Emergency Operations Center 770-488-7100. The DHFS and CDC emergency lines are not to be shared with the general public.

Additional information and recommendations will be released as they become available.

Updated information that is internet accessible will be available on:
The Wisconsin Health Alert Network (https://han.wisc.edu)
The Wisconsin Department of Health and Family Services website
The CDC website http://www.cdc.gov <http://www.cdc.gov/ncidod/>

References:

1. Garner JS, Hospital Infection Control Practices Advisory Committee. Guideline for isolation precautions in hospitals. Infect Control Hosp Epidemiol 1996;17:53-80, and Am J Infect Control 1996;24:24-52.
http://www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm
<http://www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm>

2. Hutin YJ, Williams RJ, Malfait P, et al. Outbreak of Human Monkeypox, Democratic Republic of Congo, 1996-1997. Emerg Infect Dis 2001;7:434-438.

3. Chin J, ed. Monkeypox. In: Control of Communicable Diseases Manual. 17th ed. Washington, DC: American Public Health Association, 2000: 458-459.